Instructions: Complete each of the following exercises for practice.

1. Illustrate each of the following vector fields.

   (a) $\mathbf{F} = \langle x, y \rangle$ (b) $\mathbf{F} = \langle y, x \rangle$ (c) $\mathbf{F} = \langle y, 1 \rangle$

2. For each vector field below, either show it is not conservative or compute a potential function.

   (a) $\mathbf{F} = \langle y, x \rangle$
   (b) $\mathbf{F} = \langle y, -x \rangle$
   (c) $\mathbf{F} = \langle y + 1, x + y \rangle$
   (d) $\mathbf{F} = \langle \cos(x)\cos(y), -\sin(x)\sin(y) \rangle$
   (e) $\mathbf{F} = \left\langle 2x\exp(x^2 + y), \exp(x^2 + y) \right\rangle$
   (f) $\mathbf{F} = \langle yz, xz, xy \rangle$